

## CLAIMS

What is claimed is:

1. A method, comprising:

2 defining a duty cycle for the downloading of data to a backup  
storage device, the duty cycle having a backup window period and an  
4 idle period;

receiving data during the backup window period;

6 storing the data on the backup storage device during the backup  
window period;

8 retrieving the data stored on the backup storage device during the  
idle period after the backup window period;

10 compressing the data retrieved from the backup storage device  
during the idle period; and

12 re-storing the data compressed during the idle period in  
compressed form on the backup storage device the idle periods of to  
14 reclaim space on the storage device.

2 2. The method of claim 1, wherein the compression of data is  
performed using a software data compression algorithm.

2 3. The method of claim 2, wherein the software data compression  
algorithm includes one of the following types of algorithms: a zip; a gnuzip; a  
bzip; a b2zip; a Lempel Ziv; and a LZS (Lempel Ziv Stac).

2 4. The method of claim 1, further comprising successively repeating  
the receiving and storing of data during the backup window periods and  
retrieving, compressing and storing compressed data on the backup storage  
4 device during successive duty cycles respectively.

2 5. The method of claim 1, wherein the backup storage device is an emulated tape drive containing an array of hard drives.

2 6. The method of claim 1, wherein the data is downloaded over a network from a primary storage location.

2 7. The method of claim 6, wherein the data is downloaded over a fiber-channel connection between the primary storage location and the backup storage device.

2 8. The method of claim 6, wherein the data is downloaded over an ethernet connection between the primary storage location and the backup storage device.

2 9. The method of claim 6, wherein the primary storage location and the backup storage device are part of a storage array network.

2 10. The method of claim 6, wherein the primary storage location and the backup storage device are part of a network attached storage configuration.

2 11. The method of claim 1, wherein the backup storage device is directly electrically connected to a server.

2 12. An apparatus comprising:  
2 a backup storage device comprising:  
an input/output port;  
4 an array of hard drives configured as backup storage; and

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6 a controller configured to download data received from the  
input/output port to the array of hard drives during a backup period and  
8 then reclaim storage space on the array of hard drives during an idle  
period following the backup period by retrieving the data stored on the  
array of hard drives, compressing the retrieved data, and then re-storing  
10 the compressed data on the array of hard drives.

13. The apparatus of claim 12, wherein the controller is further  
2 configured to execute a software algorithm to compress the retrieved data.

14. The apparatus of claim 13, wherein the software algorithm  
2 includes one of the following types of algorithms a zip; a gunzip; a bzip; a  
b2zip; a Lempel Ziv; and a LZS (Lempel Ziv Stac).

15. The apparatus of claim 13, wherein the software algorithm is  
2 stored in a memory associated with the controller.

16. The apparatus of claim 12, further comprising a fiber channel  
2 controller coupled between the controller and the input/output port which  
comprises an optical transceiver.

17. The apparatus of claim 12, further comprising an ethernet  
2 controller coupled between the controller and the input/output port which  
comprises an ethernet transceiver.

18. The apparatus of claim 12, wherein the array of hard drives  
2 configured as backup storage further comprises a network hub and bridge  
circuit coupled between the array of hard drives and the controller.

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19. The apparatus of claim 12, further comprising:  
2 a primary storage location coupled to the backup storage device  
through a network connection.

20. The apparatus of claim 19, wherein the network connection is one  
2 of the following types of network connections: fiber channel or ethernet.

21. The apparatus of claim 1, wherein the primary storage location  
2 and the backup storage device are arranged in one of the following: a storage  
attached network or network attached storage configuration.

22. The apparatus of claim 19, further comprising a plurality of clients  
2 and servers coupled to the primary storage location through a client network.